

SUPERPLASTIC FORMING AND DIFFUSION BONDING OF FINE GRAIN TITANIUM

ABSTRACT OF THE DISCLOSURE

A method for superplastically forming and/or diffusion bonding a structural member and an associated structural member are provided. The structural member is formed at least partially of titanium, e.g., Ti-6Al-4V, and has a fine grain structure. For example, the grain size of the material of the structural member can be less than 2 micron. The member can be superplastically formed and/or diffusion bonded at a reduced temperature, thereby potentially reducing the thermal energy required for forming and bonding, and also reducing the effects of heating on the structural member and the forming apparatus. In addition, the structural member can be formed at an increased strain rate.

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